LEGISLATION AND THE PRESS.

FOR

SCIENCE, WEALTH, AND MORALS.

DEMOCRACY OF SCIENCE.—NO. 22.

BY JOSIAH HOLBROOK.

Two great facts are manifest, and every day becoming more so—the legislation of our country, and our whole country, is directed prominently to the promotion of practical science, and the literature of our country is changing from light to solid, from trashy to substantial.

By legislative action—State and national—hundreds of millions have been expended, within a few years past, for the development and application of our natural resources. Half a million has been expended on the geological survey of New York alone, and large sums in other States, aided by thorough and greatly extended surveys under the General Government. Some five hundred millions have been expended on railroads; nearly as much, perhaps, on canals; and very large sums on telegraphs. By many of the States "bureaus of agriculture" have been established; and agricultural societies, both for States and counties, are common through our entire country. Some of our colleges are provided with professors of agriculture, and agricultural departments, in some cases, added to academies; and several institutions are proposed—perhaps in operation—for the express purpose of instruction in agriculture and mechanism. Even in common primary schools, elementary treatises on agriculture are used as class-books, aided by cabinets of geology and other specimens, both of nature and art. Some schools are provided with surveyors' instruments, used on excursions by the pupils, to render more thorough their surveys for exploring the general resources of the surrounding country. The time is not distant when a surveyor's compass will be considered an essential appendage to every school, and excursions for using it an indispensable exercise for pupils everywhere in the country. The elements of agriculture and mechanism, evidently embracing the elements of nature—animals, vegetables, and minerals—are coming to be recognised as the most essential subjects of primary instruction, and that more by experiment and observation, than by abstract theories from books.

The spirit of the age must control the literature, the reading of the age. When science is universally cultivated, scientific books will be universally read. New and better books on science will be furnished, coming out in quick succession, to meet the demands of society, and to supply the wants of business. Scientific reading will be the fashionable reading of the day. Even now the fashionable science of Europe is agriculture, as well it may be, being as it truly is, the science of all sciences.

From the statements of booksellers, this change has already commenced, in good earnest. The flashy annuals, recently all the fashion, say they, are dead; and not one-third of the trashy light reading, of various descriptions, called for five years since, finds at present any demand. If books of the most substantial character are not yet in general demand, those the most light and trifling are greatly in disuse.

"World's Fairs," and "fairs" all over the world, are becoming, have become, the fashion of the age. At this moment, not less than three World's Fairs are in the process of preparation. There may be many others. In aid of "Industrial Exhibitions" for farmers, mechanics, and other classes, the public press is brought largely into requisition; the more such exhibitions are extended, the more the attention of the press is absorbed by them. The more scientific surveys are extended, the more the press will become an engine of science. Let scientific surveys become the regular exercises of schools, and newspapers the organs of those surveys, and the schools will have new vehicles of knowledge, always fresh, and papers new fields of labor, always enlarging. Who does not see that such a time is near, and, when it comes,

scientific literature will be the fashionable literature of our country and the world?

DEMOCRACY OF SCIENCE—NO. 23.

BY JOSIAH HOLBROOK.

The schools of our country are to be the explorers of our country. Why not? Would not "SCIENTIFIC EXCURSIONS," as a prominent part of school systems, combine instruction, health, and pleasure? Is not the nature of a boy to "*leave no stone unturned?*" If the schools of the whole country should make it their business to explore their surrounding districts, would not the whole country be explored? In their scientific excursions, might they not take their mineral hammers and bags, their sketching pencils, surveyors' compasses, and other instruments, and by them examine the geology, geography, topography, botany, zoology, water-courses, agriculture, mechanical improvements, and other objects, showing resources and progress? Would not such weekly excursions give greater energy and richer fruits to all school operations? Would not knowledge, acquired in this way, be more extended, more individual, more available, more "DEMOCRATIC," than that acquired by scientific professors, especially when aided, as they certainly would be, most gladly, by such professors? Would not farmers be sooner and better able to know the character and capabilities of their own fields, through personal, experimental, and minute examinations, by their sons and daughters, and themselves, too, than through ponderous volumes, giving the general outlines of the country, especially while those volumes were confined to the shelves of State and college libraries, and a few other secluded depositories? Would not knowledge, thus generally and practically acquired, be transmitted, exchanged, and diffused, making the citizens of one part of the country acquainted with all the other parts? Would not thus employing the juvenile energies of the country do more to check lawlessness than prisons? Would not truants be among the things that were? Would not the worst scholars be changed into the best? Might there not be written on houses of refuge for juvenile delinquents, "To LET?"

In answer to these questions, a few facts may be given, selected from a mass sufficient to fill volumes. About twenty years since, the Boston schools united in exploring the surrounding country. From their collections they furnished every member of their Legislature with a small cabinet of elementary minerals, to be circulated among the schools of his legislative district. The next Legislature ordered a geological survey of the State. The impetus thus given has led to similar surveys of all the States of our Union. The superintendent of schools, in the city of New York, sent to the teachers a circular, inviting them to request their pupils to collect minerals, to be classified, labeled, and distributed, for the use of "FAMILY MUSEUMS." Within three weeks from that request, not less than twelve thousand families were thus furnished with these instructive and entertaining household utensils. Many of the most incorrigible truants became at once the most punctual, orderly, and promising scholars. A teacher, in Philadelphia, said to his pupils one day, "Boys, all who will have their lessons well to-morrow, at ten o'clock, may accompany me on a geological excursion." At the hour named, every boy had a good lesson; and several of them for the first time in their lives. A proposal was once made to a school, reputed as disorderly, to take an excursion for collecting minerals, to be distributed among the pupils of the three departments, numbering some five hundred. On returning home from school at night, every pupil took with him six labeled minerals, showing the elements of mountains, rocks, and soils. They were the fruit of one excursion, and other corresponding exercises. This school was soon known as among the very first in a large city.

DEMOCRACY OF SCIENCE.—NO. 24.

BY JOSIAH HOLBROOK.

The seeds of science have been widely scattered through Congressional districts by those representing them. Reports of our resources have thus been distributed by thousands and millions; collections of minerals and other specimens, showing the character of those resources, have also been distributed in considerable numbers. By "CABINETS OF AGRICULTURE AND MECHANISM," properly selected, classified, labeled, and described, not only our natural resources, but their applications and capabilities, might be widely exhibited in a most available form. A few thousands thus applied for diffusing, in a practical, available form, the knowledge accumulated by scientific explorations, would increase many fold the value of the millions wisely appropriated for making such explorations.

The elements of agriculture and mechanism are exceedingly few, simple, and comprehensive. Hence, collections of a limited character, properly prepared, would illustrate the fundamental principles, and many of the *practical workings*, of those two great pursuits of human beings; giving, at the same time, a comprehensive grasp of the elements of science in its greatly varied relations to human progress and human elevation.

Even one such collection, placed in each Congressional district, to be used at the discretion of him representing it, could hardly fail to exert a wide-spread and powerful, because a combined, influence upon the science, wealth, and morals, of our country. The far-reaching instruction and the inherent riches in the ele-

ments of nature and combinations of art, when practically exhibited, seldom, if ever, fail to excite the enthusiasm of all young spirits, and is especially fitted to secure the interest, by gratifying the taste, of the female mind. In numerous cases the wives and daughters of members of Congress, also of the supreme judges of our land, have given practical, *productive* demonstrations of their appreciation of the great value, and the inherent beauty and richness, of these *keys of knowledge*, in opening by them its treasures for adding to the progress and the refinements of art.

By such agencies, and the various privileges and influences connected with them, such collections in all our Congressional districts would constitute so many radiating points of scientific light, all so blending and commingling their rays as to spread one common flood of light over our entire country. Directly and indirectly, colleges, academies, and schools, would feel their influence. By these combined agencies, a general spirit of inquiry would be awakened, embracing both schools and families, which inquiry, generally extended and combined, could not fail to secure the most complete development of our natural resources, and the best application of those resources to the requirements of body, mind, and soul.

Such inquiries for such objects would, of course, find the public press as the most powerful helper. It has, indeed, been the strong agency for awakening such inquiries, and securing such progress, as to produce a common feeling of amazement, in view of present aspects and prospects, armed with new enthusiasm, for inquiries still more searching, aiming at advancement still more lofty and triumphant. It does not require a gift of prophecy to foretell that the public press is destined, ere long, to become one grand "Scientific Journal," loading its columns with the beauties, the wonders, and the riches of science, with the noble, lofty aim, of using that science for the high and holy purposes designed by the Creator.

DEMOCRACY OF SCIENCE.—NO. 25.

BY JOSIAH HOLBROOK.

Legislative provision through the States for supplying the schools—all the schools—of the country with "Cabinets of Agriculture and Mechanism," would make large returns for outlays, from each of six different sources:

First. *Increased qualifications of teachers.*—The elements of these two great pursuits, practically exhibited and explained, would furnish the keys of knowledge to teachers, and could not fail to enrich their minds with new stores, or to give them new skill in imparting those stores to their pupils. They would not, indeed, furnish all the various qualifications to be obtained at a normal school; but they might increase the qualifications of the whole body of teachers in the land, giving them a desire constantly to seek new treasures, and new skill in transferring them to others.

Second. *Collections by pupils.*—A school cabinet never fails to lead pupils to make collections for themselves, both at their school-rooms and their homes. Thus, a hundred specimens are soon increased to thousands, and a single cabinet, at the school-house, is multiplied to equal the number of families in the district, making the additions many fold the value of the original outlay.

Third. *Development of resources.*—Numerous districts of country, for miles in extent, have already been explored thoroughly and minutely by schools located in them. Discoveries of great variety and richness have thus been made. The discovery of chrome ore, on a geological excursion, has reduced the price of chrome yellow from fifteen dollars to fifteen cents a pound, conferring a benefit on every member of society.

Fourth. *The advancement of agriculture and the mechanic arts.*—What better mode to advance any subject, than to render a knowledge of its principles familiar, practical, and universal? What better mode to render familar the knowledge of any subject, than practical exhibitions of its principles, properly explained and applied? A hundred minerals, properly explained in their character, relations, and uses, with a process of analyzing them, showing their connection with farming and mechanism, and a moderate collection of the elements and combinations of forms, as exhibited in nature and art, would throw a flood of light on all the operations of farmers and mechanics, affording a mighty grasp upon the whole circle of knowledge.

Fifth. *Reciprocation.*—Once let the juvenile energies of the country be combined on a great system of productive science, and reciprocation is inevitable; and who can calculate the power or the mighty results of such combined efforts, rendered still more powerful by each giving and receiving strength from all the rest?

Sixth. *A check upon lawlessness.*—Will any one doubt that the juvenile energies of the country can be employed in exploring the resources of the country? Has any one ever seen a boy who would not gladly engage in exploring the surrounding country? While thus employed, will they seek opportunities for lawless outbreaks? Within five years past, as many millions of property have been destroyed by juvenile incendiaries; a greater portion of them, no doubt, educated in the schools of our country. If, while at school, their attention had been so directed as to show visible productive fruits of their efforts, and thus *self-respect promoted*, could they have been induced to join a party of incendiaries or others, for disgracing themselves by outrages upon society? Surely, if schools do not prevent their pupils from becoming thieves, midnight assassins, and incendiaries,

they are not so good as they ought to be; and as surely not so good as they may be.

DEMOCRACY OF SCIENCE.—NO. 26,

BY JOSIAH HOLBROOK.

"NATUTE BEFORE BOOKS, DRAWING BEFORE WRITING," is a motto extensively adopted in schools, and destined soon to become universal. It is founded on common sense, and is put in operation by enthusiasm, acting on the combined energies of all young spirits. It requires no preparation, to be adopted in any school in the world, but the *permission* of the teacher. If all children, before entering school, take lessons, with great ardor and success from the book of nature, they may surely continue such lessons, if aided, if not prevented by their teacher. If the ratan is required to prevent drawing exercises in school, such exercises may surely be pursued, if properly encouraged.

A simple request from a teacher to his pupils to make collections for a SCHOOL CABINET, never fails to bring such a collection on the next entrance of the pupils into the school-room. A teacher only needs to place before his pupils an apple, pear, peach, plum; a leaf, pitcher, tumbler, cup, inkstand, cube, cone, cylinder, prism, his hand, or almost any object in nature or art, requesting them to draw it, to secure a beginning in the useful and elegant accomplishment of drawing.

Nature and art, thus combined for juvenile instruction, are the foundation of the *great system* of productive education. Such productions furnish materials for "SCHOLARS' FAIRS," and scholars' fairs are the entering wedge to a general and stupendous plan of interchanges in works of nature and art. Such interchanges, universally extended, would beat swords into plowshares, and spears into pruning-hooks.

Between the "productive system" and the "book system" of education there is a wide contrast. The former is NATURAL, PRACTICAL, MORAL; the latter, *artificial, theoretical, selfish.* The one brings into combined and harmonious action the hand, eye, judgment, taste, imagination, benevolence, conscientiousness, and all the higher emotions of the human soul; the other exercises little more than the memory. The one rouses enthusiasm; the other begets dread. The one calls for the check-rein; the other gives constant use to the spur. The former stores the mind with principles—*keys of knowledge;* the latter lumbers the mind with the arbitrary signs of knowledge. The one gives great skill and taste in the use of language, making the structure of sentences one of the most delightful exercises; the other requires months and years of irksome labor, for repeating the rules of grammar. The former inspires emulation among pupils, for doing their most to let their "light shine;" the latter at best only attempts to obtain light for one's own mind, forgetting that light ceasing to radiate ceases to be light; the light within being darkness, is great darkness. The one is diffusion; the other, consolidation. The one, the "DEMOCRACY;" the other, despotism of science.

The productive system rouses self-respect; and, being productive, brings to view and cultivates a sense of resposibility, making some returns for what is received. The mere book system, hardly permiting the efforts or feelings of pupils to extend beyond themselves, of course cannot promote self-respect, or a sense of responsibility to others. The natural system directs the choice of reading to books on substantial science; the mere book system, destroying a taste for the beauties and wonders of nature, leads to the reading of trashy fiction, to satisfy and promote an unnatural, sickly imagination.

The moral system tends to lift up the noblest energies of the soul to heaven; the selfish system tends to crush those energies to the earth. The one, carried out, would change school-houses and dwellings into "crystal palaces;" the other makes demands for houses of refuge faster than they can be supplied. The path of the one is delightful, constantly placing before the traveller a splendid mansion, stored with inexhaustible riches; the path of the other is rugged, thorny, and dreary, presenting only darkness and gloom, without change, except by becoming more dark and gloomy. The one tends to secure the purposes of human existence; the other, to defeat those purposes.